

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES**

In re Application of:
Dettinger et al.

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Confirmation No.: 5542

Examiner: Usmaan Saeed

For: DATA QUERY SYSTEM LOAD BALANCING

MAIL STOP APPEAL BRIEF - PATENTS
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July 5, 2007

Joseph Jong/

Date

Joseph Jong

Dear Sir:

APPEAL BRIEF

Applicants submit this Appeal Brief to the Board of Patent Appeals and Interferences on appeal from the decision of the Examiner of Group Art Unit 2166 dated March 19, 2007, finally rejecting claims 1, 4-20 and 23-42. The final rejection of claims 1, 4-20 and 23-42 is appealed. This Appeal Brief is believed to be timely since it is transmitted by the due date of August 20, 2007, as set by the filing of a Notice of Appeal on June 19, 2007.

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TABLE OF CONTENTS

1.	Identification Page.....	1
2.	Table of Contents	2
3.	Real Party in Interest	3
4.	Related Appeals and Interferences	4
5.	Status of Claims	5
6.	Status of Amendments	6
7.	Summary of Claimed Subject Matter	7
8.	Grounds of Rejection to be Reviewed on Appeal	12
9.	Arguments	13
10.	Conclusion	21
11.	Claims Appendix	22
12.	Evidence Appendix	32
13.	Related Proceedings Appendix	33

Real Party in Interest

The present application has been assigned to International Business Machines Corporation, Armonk, New York.

Related Appeals and Interferences

Applicant asserts that no other appeals or interferences are known to the Applicant, the Applicant's legal representative, or assignee which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

Status of Claims

Claims 1, 4-20 and 23-42 are pending in the application. Claims 1-42 were originally presented in the application. Claims 2-3 and 21-22 have been canceled without prejudice. Claims 1, 4-20 and 23-42 stand finally rejected as discussed below. The final rejections of claims 1, 4-20 and 23-42 are appealed. The pending claims are shown in the attached Claims Appendix.

Status of Amendments

All claim amendments have been entered by the Examiner, including amendments to the claims proposed after the final rejection.

Summary of Claimed Subject Matter

A. CLAIM 1 - INDEPENDENT

Claim 1 recites a computer-implement method for managing query execution in a data processing system that stores, in a storage medium, at least one query execution schedule. See *Application*, page 4: lines 5-6; page 10: lines 14-16; page 19: lines 13-14; Figure 1, items 125 and 180; Figure 2A, items 232 and 236; Figure 3, step 320. Each query execution schedule defines query eligibility criteria identifying specific queries and a timeframe available for executing the specific queries. See *Application*, 4: 12-15; 19: 14-16; 20: 15-17; Fig. 2A, 234 and 238; Fig. 4, 420 and 430. In addition, as claimed, the method includes receiving a query against the database, determining which query execution schedule applies to the query, and scheduling a time to execute the query based on the relevant query execution schedule. See *Application*, 4: 15-19; 19: 18-21; 21: 8-17; 21: 31 - 22: 7; Fig. 3, 330; Fig. 5, generally.

B. CLAIM 7 - INDEPENDENT

Claim 7 recites a computer-implement method for managing query execution in a data processing system that includes a plurality of query execution schedules. See *Application*, 4: 11-13; 10: 14-16; 19: 13-14; Fig. 1, 125 and 180; Fig. 2A, 232 and 236; Fig. 3, step 320. Each query execution schedule defines query eligibility criteria identifying specific queries and a timeframe available for executing the specific queries. See *Application*, 4: 12-15; 18: 17-20, 27-29; 19: 14-16; 20: 15-17; Fig. 2A, 234 and 238; Fig. 2B, 260; Fig. 2C, 280; Fig. 4, 420 and 430. In addition, as claimed, the method includes receiving a query against the database, determining which query execution schedule applies to the query, and scheduling a time to execute the query based on the relevant query execution schedule. See *Application*, 4: 15-19; 19: 18-21; 21: 8-17; 21: 31 - 22: 7; Fig. 3, 330; Fig. 5, generally.

C. CLAIM 15 - INDEPENDENT

Claim 15 recites a computer-implemented method of providing a query execution schedule for scheduling execution of specific queries against a database in a data

processing system. See *Application*, 4: 21-23; 8: 13; Fig. 1, 180; Fig. 3, 320. The method defines query eligibility criteria identifying specific queries and a timeframe available for executing the specific queries. See *Application*, 4: 23-25; 18: 17-20, 27-29; 20: 15-17; Fig. 2A, 234; Fig. 2B, 260; Fig. 2C, 280; Fig. 4, 420 and 430. Furthermore, as claimed, the method associates the query eligibility criteria and the timeframe with the query execution schedule and schedules the execution of specific queries based on the query eligibility criteria and the timeframe in the relevant query execution schedule. See *Application*, 4: 25-26; 8: 14-15; 21: 15-17; 21: 31 - 22: 7; Fig. 3, 330; Fig. 4, 440; Fig. 5, generally.

D. CLAIM 20 - INDEPENDENT

Claim 20 recites a computer readable storage medium containing a program which, when executed, performs a process for managing query execution in a data processing system that includes at least one query execution schedule. See *Application*, 4: 28-30; 5: 7; 10: 14-16; 19: lines 13-14; Fig. 1, 125 and 180; Fig. 2A, 232 and 236; Fig. 3, 320. Each query execution schedule defines query eligibility criteria identifying specific queries and a timeframe available for executing the specific queries. See *Application*, 5: 7-9; 19: 14-16; 20: 15-17; Fig. 2A, 234 and 238; Fig. 4, 420 and 430. In addition, as claimed, the process includes receiving a query against the database, retrieving at least one query execution schedule, determining which query execution schedule applies to the query, and scheduling a time to execute the query based on the relevant query execution schedule. See *Application*, 5: 4-13; 19: 18-21; 21: 8-17; 21: 31 - 22: 7; Fig. 3, 330; Fig. 5, generally.

E. CLAIM 26 - INDEPENDENT

Claim 26 recites a computer readable storage medium containing a program which, when executed, performs a process for managing query execution in a data processing system that includes a plurality of query execution schedules. See *Application*, 4: 28-30; 5: 7; 10: 14-16; 19: lines 13-14; Fig. 1, 125 and 180; Fig. 2A, 232 and 236; Fig. 3, 320. Each query execution schedule defines query eligibility criteria identifying specific queries and a timeframe available for executing the specific queries.

See *Application*, 5: 7-9; 19: 14-16; 20: 15-17; Fig. 2A, 234 and 238; Fig. 4, 420 and 430. In addition, as claimed, the process includes receiving a query against the database, retrieving a plurality of query execution schedules, determining which query execution schedule applies to the query, and scheduling a time to execute the query based on the relevant query execution schedule. See *Application*, 5: 4-13; 19: 18-21; 21: 8-17; 21: 31 - 22: 7; Fig. 3, 330; Fig. 5, generally.

F. CLAIM 34 – INDEPENDENT

Claim 34 recites a computer readable storage medium containing a program which, when executed, performs a process providing a query execution schedule for scheduling execution of specific queries against a database in a data processing system. See *Application*, 5: 15-18; 8: 13; Fig. 1, 180; Fig. 3, 320. The method defines query eligibility criteria identifying specific queries and a timeframe available for executing the specific queries. See *Application*, 5: 18-20; 18: 17-20, 27-29; 20: 15-17; Fig. 2A, 234; Fig. 2B, 260; Fig. 2C, 280; Fig. 4, 420 and 430. Furthermore, as claimed, the method associates the query eligibility criteria and the timeframe with the query execution schedule and schedules the execution of specific queries based on the query eligibility criteria and the timeframe in the relevant query execution schedule. See *Application*, 5: 10-13, 20-21; 8: 14-15; 21: 15-17; 21: 31 - 22: 7; Fig. 3, 330; Fig. 4, 440; Fig. 5, generally.

G. CLAIM 39 – INDEPENDENT

Claim 39 recites a data processing system including a processor, a database stored in a storage medium, and a query manager residing in memory for managing query execution in the data processing system. See *Application*, 5: 23-25; 10: 14-16; 12: 28-31; Fig. 1, 121, 122, 137, 160.

As claimed, the query manager, when executed by the processor, is configured to receive a query against the database, retrieve at least one query execution schedule and schedule a time to execute the query based on the relevant query execution schedule. See *Application*, 5: 4-13; 19: 18-21; 21: 8-17; 21: 31 - 22: 7; Fig. 3, 330; Fig. 5, generally.

H. CLAIM 40 – INDEPENDENT

Claim 40 recites a data processing system including a processor, a database stored in a storage medium, and a query manager residing in memory for managing query execution in the data processing system. See *Application*, 5: 30-32; 10: 14-16; 12: 28-31; Fig. 1, 121, 122, 137, 160.

As claimed, the query manager, when executed by the processor, is configured to receive a query against the database, retrieve a plurality of query execution schedules, and schedule a time to execute the query based on the relevant query execution schedule. See *Application*, : 5: 32 – 6:8; 19: 18-21; 21: 8-17; 21: 31 - 22: 7; Fig. 3, 330; Fig. 5, generally. Each query execution schedule defines query eligibility criteria identifying specific queries and a timeframe available for executing the specific queries. See *Application*, 6: 1-3; 19: 14-16; 20: 15-17; Fig. 2A, 234 and 238; Fig. 4, 420 and 430.

I. CLAIM 41 – INDEPENDENT

Claim 41 recites a data processing system including a processor, a database stored in a storage medium, and a query manager residing in memory for managing query execution in the data processing system. See *Application*, 6: 9-11; 10: 14-16; 12: 28-31; Fig. 1, 121, 122, 137, 160.

As claimed, the query manager, when executed by the processor, is configured to define query eligibility criteria identifying specific queries and a timeframe available for executing the specific queries. See *Application*, 6: 12-14; 18: 17-20, 27-29; 20: 15-17; Fig. 2A, 234; Fig. 2B, 260; Fig. 2C, 280; Fig. 4, 420 and 430. Furthermore, as claimed, the method associates the query eligibility criteria and the timeframe with the query execution schedule and schedules the execution of specific queries based on the query eligibility criteria and the timeframe in the relevant query execution schedule. See *Application*, 6: 5-7, 14-16; 8: 14-15; 21: 15-17; 21: 31 - 22: 7; Fig. 3, 330; Fig. 4, 440; Fig. 5, generally.

J. CLAIM 42 – INDEPENDENT

Claim 42 recites a data structure, residing in memory, for scheduling execution of specific queries against a database in a data processing system. See *Application*, 6: 18-19; Fig. 2B, 260; Fig. 2C, 280. The data structure includes at least one query eligibility criterion field for identifying the specific queries to be scheduled and a timeframe field for identifying a period of time available for executing the specific queries. See *Application*, 6: 19-22; 15: 7-14; 17: 24-31; 18: 10-11, 22-24; Fig. 2B, 262, 264, and 266; Fig. 2C, 282, 284, and 286.

As claimed, for a given query, an application accesses the eligibility criterion field to determine whether the given query is one of the specific queries and, if so, accesses the timeframe field to identify a period of time available for executing the given query and then outputs information specifying when to execute the given query against the data processing system. 16: 5-11; 21: 8-17, 26-32; Fig. 2A, 220, 224; Fig. 5, 520, 530; Fig. 7, 780

Grounds of Rejection to be Reviewed on Appeal

1. Rejection of claims 1-41 under 35 U.S.C. 101 as being directed to non- statutory subject matter.
2. Rejection of claims 1-7, 10-12, 15-17, 20-26, 29-31, 34-36, and 39-42 under 35 U.S.C. 103(a) as being unpatentable over *Snodgrass et al.* (U.S. Publication 2004/0117359, hereinafter, "*Snodgrass*"), in view of *Rubert et al.* (U.S. Patent No. 6,366,915, hereinafter, "*Rubert*").
3. Rejection of claims 8-9, 13-14, 18-19, 27-28, 32-33, and 37-38 under 35 U.S.C. 103(a) as being unpatentable over *Snodgrass* in view of *Rubert* as applied to claims 1-7, 10-12, 15-17, 20-26, 29-31, 34-36, and 39-42 above further in view of *Lomet et al.* (U.S. Patent No. 5,212,788, hereinafter, "*Lomet*").

ARGUMENTS

1. Rejection of claims 1-41 under 35 U.S.C. 101 as being directed to non-statutory subject matter.

Claims 1-41 are rejected under 35 U.S.C. 101 as being directed to non- statutory subject matter.

Applicants maintain that a computer readable storage medium containing a program is directed to patentable subject matter. A claimed invention is directed to a practical application of a § 101 judicial exception when it “transforms” an article or physical object to a different state or thing. MPEP § 2106.IV.C.2.(A). A computer readable storage medium is a physical article, and reading and/or writing a program from/onto a computer readable storage medium is a physical transformation of that physical article into a different state.

Furthermore, in Applicants' previous response, filed October 17, 2006, we stated:

While Applicants' disagree with the Examiner's basis for the present rejection, Applicants' have nevertheless made amendments in order to move prosecution forward. Specifically, claims 1-19 have been amended to recite a computer-implemented method. In addition, scheduling the execution of queries on the basis of predetermined query eligibility criteria and a timeframe is clearly a useful, concrete and tangible result. Regarding claims 20-38 the claims have been amended as suggested by the Examiner to recite a “storage” medium. Therefore, the claims are believed to be allowable, and allowance of the claims is respectfully requested.

Applicants respectfully submit that the Examiner has not addressed these arguments and amendments in either the subsequent Final Office Action dated March 19, 2007, or in the Advisory Action. In light of Applicant's previous amendments and arguments, Applicants respectfully request withdrawal of this rejection.

2. Rejection of claims 1-7, 10-12, 15-17, 20-26, 29-31, 34-36, and 39-42 under 35 U.S.C. 103(a) as being unpatentable over *Snodgrass*, in view of *Rubert*.

The Applicable Law

The Examiner bears the initial burden of establishing a *prima facie* case of obviousness. See MPEP § 2142. To establish a *prima facie* case of obviousness three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one ordinary skill in the art to modify the reference or to combine the reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. See MPEP § 2143. The present rejection fails to establish at least the first and third criterion.

Claims 1, 7, 15, 20, 26, 34, 39, 40, 41, and 42 Are Not Obvious under 35 U.S.C. § 103(a) Snodgrass, in view of Rubert

- **Overview of Applicants' Arguments:**

Snodgrass does not disclose "providing at least one query execution schedule configured to schedule specific queries against a database in the data processing system; wherein the at least one query execution schedule is stored in a storage medium and defines query eligibility criteria identifying the specific queries and a timeframe available for executing the specific queries." *Snodgrass* deals only with a query execution plan (QEP). See paragraph 0007. It is well known in the art that a QEP does not specify a timeframe for executing a query; nor does a QEP specify query eligibility criteria. These plans are directed solely to the running of a single query, in a given case. That is, for a given query, a query optimizer develops a plurality of access plans (also known as query execution plans), and then selects one access plan from the plurality. Each of the plurality of access plans has an "estimat[ed] . . . cost . . . according to each said query plan", and the access plan is selected "based on the result from said cost calculating." See *Snodgrass*, paragraph 0016. See also paragraph 0028. Once again, this cost is only with respect to the plan being chosen, not the overall cost of several plans being run. In this regard, *Snodgrass* discloses nothing more than conventional query optimization.

Furthermore, a plan is primarily directed to how a query is run, while a schedule is primarily directed to when it will run. Further, the present claims make clear that scheduling of a given query is done relative to other queries. The present claims specifically recite a “query execution schedule configured to schedule specific queries.” Note the use of the plural, “queries.” Query execution plans, on the other hand, are developed and selected for a given query irrespective of other queries. The “plans” in *Snodgrass* simply do not deal with the cost of multiple queries, instead they deal with the cost of running one out of a plurality of queries without regard for other queries to be run. Therefore, even assuming, *arguendo*, that selecting a query execution plan is the same as scheduling when a query will execute, a selected plan does not provide a schedule for more than one query. Thus, *Snodgrass* does not disclose the claimed limitation.

With regard to *Rubert*, the reference does not disclose “scheduling a time to execute the received query on the basis of the timeframe of at least one query execution schedule.” *Rubert* actually discloses a user interface for scheduling a time to execute queries on the basis of user preference. See, *Rubert* Abstract. In *Rubert* there is no predefined query execution schedule (a data structure stored on a storage medium) that defines a timeframe for one or more queries. Therefore, *Rubert* does not schedule times for queries based on such a predefined timeframe..

- Applicants' Rebuttal of Examiner's Response to Applicants' Arguments:

In the Final Office Action dated 3-19-2007 (“Final Office Action”) the Examiner maintains that *Snodgrass* teaches “providing at least one query execution schedule configured to schedule specific queries against a database in the data processing system; wherein the at least one query execution schedule is stored in a storage medium and defines query eligibility criteria identifying the specific queries and a timeframe available for executing the specific queries.” Respectfully, Applicants disagree and provide the following further clarification.

Inexplicably, the Examiner appears to conclude without support (and, in fact, contrary to the well known meaning of query optimization) that an access plan and the claimed scheduling of a query are the same. (See, Final Office Action, page 25: lines

11, stating "[t]herefore one of the best plan/schedule is being chosen for the execution of a query.") This conclusion is particularly surprising in light of the fact that the references relied on by the Examiner clearly illustrate the difference between query optimization (*Snodgrass*) and query scheduling (*Rubert*).

In this regard, Applicants note another related mischaracterization of *Snodgrass*. At page 5 of the Final Office Action, the Examiner argues that *Snodgrass* teaches a query execution schedule that is stored in a storage medium and defines query eligibility criteria identifying specific queries. Specifically, the Examiner points to paragraph 0016 of *Snodgrass*, which teaches "means for selecting, according to a criteria, which query plan to be used when processing a query, said criteria being based on the result from said cost calculating means". Applicants point out that the selection criteria is used for selecting a query plan for a single query ("used when processing a query"). Accordingly, the criteria relied upon by the Examiner are not query eligibility criteria identifying specific queries (plural). Moreover, the "criteria" of *Snodgrass* does not identify a specific query (much less queries) at all. The criteria are the information by which a plan is selected for a query, but they do not "identify" the query.

In the Advisory Action dated 6-1-2007 ("Advisory Action"), the Examiner once again asserts that *Snodgrass* teaches a plurality of queries at paragraphs 0016 and 0020-0022. Applicants concede that a plurality of queries is taught, but respectfully assert that the Examiner has missed the point of Applicants' argument. To recapitulate, the costs of the claimed invention are calculated with respect to a plurality of queries being run, while *Snodgrass* teaches calculating the cost of running one out of a plurality of queries. The same observation applies to the Examiner's assertion in the Advisory action that *Snodgrass* teaches the same query eligibility criteria as the claimed invention at paragraph 0016. Once again, the distinction is considering the cost of several queries being run versus the cost of choosing one out of several queries. This distinction has been argued at length above. Hence, *Snodgrass* does not disclose the claimed limitation.

For these reasons, alone and collectively, Applicants respectfully said that *Snodgrass* is simply inapplicable to the present claims.

Because Applicants believe that reliance on *Snodgrass* is improper, the rejection is believed to be overcome, and Applicants respectfully request that the claims be allowed. Nevertheless, Applicants also make the following further observations with respect to *Rubert*.

The Examiner maintains that *Rubert* discloses "scheduling a time to execute the received query on the basis of the timeframe of at least one query execution schedule." However, as argued in the previous section, *Rubert* actually discloses a user interface for scheduling a time to execute queries on the basis of user preference. See, *Rubert* Abstract. To reiterate, in *Rubert* there is no predefined query execution schedule (a data structure stored on a storage medium) that defines a timeframe for one or more queries. Therefore, *Rubert* does not schedule times for queries based on such a predefined timeframe. Accordingly, Applicants respectfully request that the claims be allowed.

In addition, the Examiner maintains that there is motivation to combine the teachings of *Snodgrass* and *Rubert*. However, it would be nonsensical to combine the references in the way the Examiner suggests. *Rubert* specifically teaches that a user schedules when a query executes. Applying *Snodgrass* however would mandate the scheduling of queries be decided based on cost-efficiency of various query execution plans. Thus, users would no longer be scheduling the queries as taught by *Rubert*. See, column 6, lines 24-30 describing how a user schedules query execution by clicking the "Schedule Query Execution" button shown in the user interface of Figure 1. As such, the suggested combination would render *Rubert* unsatisfactory for its intended purpose and/or change the principle of operation of *Rubert*, making the suggested combination improper for the reasons given in MPEP 2143.01 (V, VI). Therefore, because *Rubert* and *Snodgrass* teach away from each other, there is no motivation or suggestion to combine them. Accordingly, Applicants respectfully request that the claims be allowed.

In the Advisory Action the Examiner cites *Snodgrass* while attempting to argue that *Rubert* teaches the claimed limitation. In response, Applicants note that, regardless of citation, the Examiner has not answered the Applicants' arguments regarding the user interface as detailed above and in Applicants' Response to the Final Office Action.

Thus, Applicants respectfully submit that the arguments put forth above sufficiently answer the Examiner's assertions. Accordingly, withdrawal of the rejection is respectfully requested.

Claims 7, 15, 20, 26, 34, 39, 40, 41, and 42 recite similar limitations and are therefore believed allowable for some or all of the reasons given above.

Therefore, the claims are believed to be allowable, and allowance of the claims is respectfully requested.

Claims 2-6 Are Not Obvious under 35 U.S.C. § 103(a) Snodgrass, in view of Rubert

Claims 2 and 3 have been canceled without prejudice. Claims 4-6 depend from independent claim 1, and are therefore believed to be allowable for the reasons provided above. Accordingly, withdrawal of this rejection is respectfully requested.

Claims 10-12 Are Not Obvious under 35 U.S.C. § 103(a) Snodgrass, in view of Rubert

Claims 10-12 depend from independent claim 7, and are therefore believed to be allowable for the reasons provided above. Accordingly, withdrawal of this rejection is respectfully requested.

Claims 16 and 17 Are Not Obvious under 35 U.S.C. § 103(a) Snodgrass, in view of Rubert

Claims 16 and 17 depend from independent claim 15, and are therefore believed to be allowable for the reasons provided above. Accordingly, withdrawal of this rejection is respectfully requested.

Claims 21-25 Are Not Obvious under 35 U.S.C. § 103(a) Snodgrass, in view of Rubert

Claims 21 and 22 have been canceled without prejudice. Claims 23-25 depend from independent claim 20, and are therefore believed to be allowable for the reasons provided above. Accordingly, withdrawal of this rejection is respectfully requested.

Claims 29-31 Are Not Obvious under 35 U.S.C. § 103(a) Snodgrass, in view of Rubert

Claims 29-31 depend from independent claim 26, and are therefore believed to be allowable for the reasons provided above. Accordingly, withdrawal of this rejection is respectfully requested.

Claims 35 and 36 Are Not Obvious under 35 U.S.C. § 103(a) Snodgrass, in view of Rubert

Claims 35 and 36 depend from independent claim 34, and are therefore believed to be allowable for the reasons provided above. Accordingly, withdrawal of this rejection is respectfully requested.

3. Rejection of claims 8-9, 13-14, 18-19, 27-28, 32-33, and 37-38 under 35 U.S.C. 103(a) as being unpatentable over *Snodgrass* in view of *Rubert* as applied to claims 1-7, 10-12, 15-17, 20-26, 29-31, 34-36, and 39-42 above further in view of *Lomet*.

The Examiner bears the initial burden of establishing a *prima facie* case of obviousness. See MPEP § 2142. To establish a *prima facie* case of obviousness three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one ordinary skill in the art to modify the reference or to combine the reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. See MPEP § 2143. The present rejection fails to establish at least the first and third criterion.

Claims 8-9, 13-14, 18-19, 27-28, 32-33, and 37-38 Are Not Obvious under 35 U.S.C. § 103(a) Snodgrass, in view of Rubert and further in view of Lomet

For the reasons given above, *Snodgrass* and *Rubert*, alone or in combination, do not teach, show or suggest the claim limitations. Therefore, the combination of *Snodgrass*, *Rubert*, and *Lomet* also do not teach, show or suggest the claim limitations. Therefore, claims 8-9, 13-14, 18-19, 27-28, 32-33, and 37-38 are believed to be allowable, and allowance of the claims is respectfully requested.

Furthermore, Applicants respectfully submit that independent claims 1, 7, 15, 20, 26, and 34 are allowable, as argued above. Therefore, since claims 8-9, 13-14, 18-19, 27-28, 32-33, and 37-38 depend from these argued independent claims, they are also believed to be allowable for the reasons provided regarding the independent claims. Accordingly, allowance of the claims is respectfully requested.

CONCLUSION

The Examiner errs in finding that:

1. Claims 1-41 are directed to non- statutory subject matter.
2. Claims 1-7, 10-12, 15-17, 20-26, 29-31, 34-36, and 39-42 are unpatentable over *Snodgrass*, in view of *Rubert*.
3. Claims 8-9, 13-14, 18-19, 27-28, 32-33, and 37-38 are unpatentable over *Snodgrass* in view of *Rubert* as applied to claims 1-7, 10-12, 15-17, 20-26, 29-31, 34-36, and 39-42 above further in view of *Lomet*.

Withdrawal of the rejections and allowance of all claims is respectfully requested.

Respectfully submitted, and
S-signed pursuant to 37 CFR 1.4,

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CLAIMS APPENDIX

1. (Previously Presented) A computer-implement method for managing query execution in a data processing system, comprising:

providing at least one query execution schedule configured to schedule specific queries against a database in the data processing system; wherein the at least one query execution schedule is stored in a storage medium and defines query eligibility criteria identifying the specific queries and a timeframe available for executing the specific queries;

receiving a query against the database;

determining that the received query satisfies at least a portion of the query eligibility criteria of the at least one query execution schedule; and

scheduling a time to execute the received query on the basis of the timeframe of at least one query execution schedule retrieved from the storage medium.

2-3. (Canceled)

4. (Original) The method of claim 3, wherein the query eligibility criteria comprise at least one of:

an estimated amount of resources required for execution of the specific queries;

an availability of data sources accessed by the specific queries;

a user submitting the specific queries; and

an application submitting the specific queries.

5. (Original) The method of claim 1, wherein the at least one query execution schedule is statically defined by a human operator.

6. (Original) The method of claim 1, wherein the at least one query execution schedule is dynamically defined by the data processing system on the basis of monitored system parameters.

7. (Previously Presented) A computer-implemented method for scheduling execution of a query against a database in a data processing system, comprising:

providing a plurality of query execution schedules, each query execution schedule defining query eligibility criteria identifying specific queries and a timeframe available for executing the specific queries;

receiving a query against the database;

determining, for the received query, a suitable query execution schedule on the basis of the query eligibility criteria of the plurality of query execution schedules; and

scheduling execution of the received query against the database on the basis of the timeframe defined by the suitable query execution schedule.

8. (Original) The method of claim 7, wherein a plurality of suitable query execution schedules is determined and wherein the scheduling comprises:

determining an intersection of the timeframes of the plurality of suitable query execution schedules; and

scheduling execution of the received query against the database on the basis of the determined intersection.

9. (Original) The method of claim 7, wherein a plurality of suitable query execution schedules is determined and wherein the scheduling comprises:

determining an intersection of the timeframes of the plurality of suitable query execution schedules;

determining whether the intersection is empty or not; and

if the intersection is not empty, scheduling execution of the received query against the database on the basis of the determined intersection; and

if the intersection is empty, notifying a user.

10. (Original) The method of claim 7, wherein the query eligibility criteria comprise at least one of:

an estimated amount of resources required for execution of the specific queries;

an availability of data sources accessed by the specific queries;

a user submitting the specific queries; and

an application submitting the specific queries.

11. (Original) The method of claim 7, wherein the plurality of query execution schedules is statically defined by a human operator.
12. (Original) The method of claim 7, wherein at least one of the plurality of query execution schedules is dynamically defined by the data processing system on the basis of monitored system parameters.
13. (Original) The method of claim 12, wherein the monitored system parameters comprise at least one of:
 - a peak query workload time period;
 - a light query workload time period; and
 - a time pattern indicating availability of the database.
14. (Original) The method of claim 13, wherein the database includes distributed data sources and wherein a separate time pattern is provided for each distributed data source, the separate time pattern indicating availability of a corresponding distributed data source.
15. (Previously Presented) A computer-implemented method of providing a query execution schedule for scheduling execution of specific queries against a database in a data processing system, comprising:
 - defining query eligibility criteria identifying the specific queries to be scheduled by the query execution schedule;
 - defining a timeframe available for executing the specific queries;
 - associating the query eligibility criteria and the timeframe with the query execution schedule; and
 - scheduling times to execute the specific queries against the data processing system on the basis of the query eligibility criteria and the timeframe associated with the query execution schedule.
16. (Original) The method of claim 15, wherein the query eligibility criteria comprise at least one of:
 - an estimated amount of resources required for execution of the specific queries;

an availability of data sources accessed by the specific queries;
a user submitting the specific queries; and
an application submitting the specific queries.

17. (Original) The method of claim 15, further comprising:
monitoring system parameters of the data processing system; and
wherein the defining of the query eligibility criteria and the timeframe comprises:
dynamically defining the query eligibility criteria and the timeframe on the
basis of the monitored system parameters.

18. (Original) The method of claim 17, wherein the monitored system parameters
comprise at least one of:
a peak query workload time period;
a light query workload time period; and
a time pattern indicating availability of the database.

19. (Original) The method of claim 18, wherein the database includes distributed
data sources and wherein a separate time pattern is provided for each distributed data
source, the separate time pattern indicating availability of a corresponding distributed
data source.

20. (Previously Presented) A computer readable storage medium containing a
program which, when executed, performs a process for managing query execution in a
data processing system, the process comprising:
receiving a query against a database in the data processing system;
retrieving at least one query execution schedule configured to schedule specific
queries against the database, wherein the at least one query execution schedule
defines query eligibility criteria and a timeframe available for executing queries that
satisfy at least part of the criteria; and
in response to determining that the received query satisfies at least a portion of
the criteria of query execution schedule, scheduling a time to execute the received
query on the basis of the timeframe of at least one query execution schedule.

21-22. (Canceled)

23. (Previously Presented) The computer readable storage medium of claim 22, wherein the query eligibility criteria comprise at least one of:

- an estimated amount of resources required for execution of the specific queries;
- an availability of data sources accessed by the specific queries;
- a user submitting the specific queries; and
- an application submitting the specific queries.

24. (Previously Presented) The computer readable storage medium of claim 20, wherein the at least one query execution schedule is statically defined by a human operator.

25. (Previously Presented) The computer readable storage medium of claim 20, wherein the at least one query execution schedule is dynamically defined by the data processing system on the basis of monitored system parameters.

26. (Previously Presented) A computer readable storage medium containing a program which, when executed, performs a process for scheduling execution of a query against a database in a data processing system, the process comprising:

- receiving a query against the database;
- retrieving a plurality of query execution schedules, each query execution schedule defining query eligibility criteria identifying specific queries and a timeframe available for executing the specific queries;
- determining, for the received query, a suitable query execution schedule on the basis of the query eligibility criteria of the plurality of query execution schedules; and
- scheduling execution of the received query against the database on the basis of the timeframe defined by the suitable query execution schedule.

27. (Previously Presented) The computer readable storage medium of claim 26, wherein a plurality of suitable query execution schedules is determined and wherein the scheduling comprises:

determining an intersection of the timeframes of the plurality of suitable query execution schedules; and

scheduling execution of the received query against the database on the basis of the determined intersection.

28. (Previously Presented) The computer readable storage medium of claim 26, wherein a plurality of suitable query execution schedules is determined and wherein the scheduling comprises:

determining an intersection of the timeframes of the plurality of suitable query execution schedules;

determining whether the intersection is empty or not; and

if the intersection is not empty, scheduling execution of the received query against the database on the basis of the determined intersection; and

if the intersection is empty, notifying a user.

29. (Previously Presented) The computer readable storage medium of claim 26, wherein the query eligibility criteria comprise at least one of:

an estimated amount of resources required for execution of the specific queries;

an availability of data sources accessed by the specific queries;

a user submitting the specific queries; and

an application submitting the specific queries.

30. (Previously Presented) The computer readable storage medium of claim 26, wherein the plurality of query execution schedules is statically defined by a human operator.

31. (Previously Presented) The computer readable storage medium of claim 26, wherein at least one of the plurality of query execution schedules is dynamically defined by the data processing system on the basis of monitored system parameters.

32. (Previously Presented) The computer readable storage medium of claim 31, wherein the monitored system parameters comprise at least one of:

a peak query workload time period;

a light query workload time period; and
a time pattern indicating availability of the database.

33. (Previously Presented) The computer readable storage medium of claim 32, wherein the database includes distributed data sources and wherein a separate time pattern is generated for each distributed data source, the separate time pattern indicating availability of a corresponding distributed data source.

34. (Previously Presented) A computer readable storage medium containing a program which, when executed, performs a process of providing a query execution schedule for scheduling execution of specific queries against a database in a data processing system, the process comprising:

defining query eligibility criteria identifying the specific queries to be scheduled by the query execution schedule;

defining a timeframe available for executing the specific queries;

associating the query eligibility criteria and the timeframe with the query execution schedule; and

scheduling times to execute the specific queries against the data processing system on the basis of the query eligibility criteria and the timeframe associated with the query execution schedule.

35. (Previously Presented) The computer readable storage medium of claim 34, wherein the query eligibility criteria comprise at least one of:

an estimated amount of resources required for execution of the specific queries;

an availability of data sources accessed by the specific queries;

a user submitting the specific queries; and

an application submitting the specific queries.

36. (Previously Presented) The computer readable storage medium of claim 34, further comprising:

monitoring system parameters of the data processing system; and

wherein the defining of the query eligibility criteria and the timeframe comprises:

dynamically defining the query eligibility criteria and the timeframe on the basis of the monitored system parameters.

37. (Previously Presented) The computer readable storage medium of claim 36, wherein the monitored system parameters comprise at least one of:

- a peak query workload time period;
- a light query workload time period; and
- a time pattern indicating availability of the database.

38. (Previously Presented) The computer readable storage medium of claim 37, wherein the database includes distributed data sources and wherein a separate time pattern is provided for each distributed data source, the separate time pattern indicating availability of a corresponding distributed data source.

39. (Previously Presented) A data processing system comprising:

- a processor;
- a database stored in a storage medium; and
- a query manager residing in memory for managing query execution in the data processing system, the query manager, when executed by the processor, being configured for:

- receiving a query against the database;
- retrieving at least one query execution schedule configured to schedule specific queries against the database; and
- scheduling a time to execute the received query on the basis of the at least one query execution schedule.

40. (Previously Presented) A data processing system comprising:

- a processor;
- a database stored in a storage medium; and
- a query manager residing in memory for scheduling execution of a query against the database, the query manager, when executed by the processor, being configured for:

- receiving a query against the database;

retrieving a plurality of query execution schedules, each query execution schedule defining query eligibility criteria identifying specific queries and a timeframe available for executing the specific queries;

determining, for the received query, a suitable query execution schedule on the basis of the query eligibility criteria of the plurality of query execution schedules; and

scheduling execution of the received query against the database on the basis of the timeframe defined by the suitable query execution schedule.

41. (Previously Presented) A data processing system comprising:

a processor;

a database stored in a storage medium; and

a query execution schedule manager residing in memory for providing a query execution schedule for scheduling execution of specific queries against the database, the query execution schedule manager, when executed by the processor, being configured for:

defining query eligibility criteria identifying the specific queries to be scheduled by the query execution schedule;

defining a timeframe available for executing the specific queries;

associating the query eligibility criteria and the timeframe with the query execution schedule; and

scheduling times to execute the specific queries against the data processing system on the basis of the query eligibility criteria and the timeframe associated with the query execution schedule.

42. (Previously Presented) A data structure for scheduling execution of specific queries against a database in a data processing system, the data structure residing in memory and comprising:

at least one query eligibility criterion field for identifying the specific queries to be scheduled; and

a timeframe field for identifying a period of time available for executing the specific queries;

wherein, for a given query, an application accesses the eligibility criterion field to determine whether the given query is one of the specific queries and, if so, accesses the timeframe field to identify a period of time available for executing the given query and then outputs information specifying when to execute the given query against the data processing system.

EVIDENCE APPENDIX

None.

RELATED PROCEEDINGS APPENDIX

None.